

THE GENUS EREMOMYIA STEIN IN NORTH
AMERICA, WITH DESCRIPTIONS OF NEW
SPECIES. (MUSCIDÆ: DIPTERA)

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The genus *Eremomyia* was erected by Stein (1898)¹ for the reception of four newly described North American species, the first named, *humeralis*, being designated the genotype by Coquillett (1901). Later Stein (1919) added a fifth species to the group, namely *Pegomyia setosa* Stein. Séguy (1937) in *GENERA INSECTORUM* listed nine nominal species in the genus, of which two were recorded from Europe. Concerning these species it may be mentioned that *E. setosa* (Stein) was placed by Malloch² in *Eremomyioides*, along with *Eremomyia cylindrica* Stein; the species *E. apicalis* Stein, *E. incompleta* Stein, *E. major* Malloch have been included by Hockett³ in the genus *Pegomyia sens. lat.*; the species *E. depressa* Malloch,⁴ described from Idaho, the type of which has recently been reexamined, is I consider the same species as *Leucophora* (= *Hammomyia*) *sociata* (Meigen). Thus in my opinion there remains only two North American species in Séguy's list that may properly be regarded as belonging to the genus *Eremomyia*, namely *Eremomyia humeralis* Stein and *Eremomyia pilimana* (Ringdahl), the latter being identical with *E. vernalis* Hockett.

In the present review of the genus ten species are recorded from North America, eight of which are described as new.

The genus *Eremomyia* may be linked to *Eremomyioides* and the *major*-group in *Pegomyia* owing to the similar appearance

¹ Figures in parentheses refer to literature cited in synonymies as indicated by date of publication.

² Malloch, J. R. 1918. Notes and descriptions of some anthomyid genera. Proc. Biol. Soc. Wash., XXXI: 67-68.

³ Hockett, H. C. 1941. A revision of the North American species belonging to the genus *Pegomyia*. (Diptera: Muscidae). Mem. Amer. Ent. Soc. No. 10, p. 14.

⁴ Malloch, J. R. 1918. Diptera from the Southwestern United States. Trans. Amer. Ent. Soc., XLIV: 304.

and structure of the hypopygium and copulatory appendages in the male. The ninth tergum (anal sclerite) is rounded dorsad, the gonostyli (inferior forceps) are styliform, cleft at apex on inner margin, and bear spinules, the processes of fifth abdominal sternum are subcylindrical with bristles on outer surface increasing in length distad, the processes also have a series of incurving weak bristles on distal half of inner border (figs. 1-3). In the female of *Eremomyia* and *Eremomyioides* the abdomen is depressed and broadly suboval in outline when viewed from above, being widest prebasad; the fifth abdominal tergum has slender semierect bristlelike setæ similar to those on ventral aspect of terga, and which are dissimilar to the short decumbent setulæ on dorsum of preceding terga. All the species in *Eremomyia* have bare eyes and arista, long prealar bristle, one mid posterodorsal bristle on mid tibia, and subequal squamal scales; the lower or second posthumeral bristle is invariably well developed in male and in female of certain species, but in others it is a variable character.

The genus *Eremomyia* differs from *Eremomyioides* in the absence of fine setulæ on propleura, pteropleura, hypopleura and sterna of thorax, and from the *major*-group of *Pegomyia* by the presence of more than two posterodorsal bristles on hind tibia, and by the absence of mesopleural setulæ on the declivity dorsad of mesothoracic spiracle. The species may invariably be distinguished from those of *Hylemyia sens. lat.* by the absence of cruciate bristles and by the setulose character of the under surface of costa; further in the male by the absence of semierect posteroventral setulæ on hind tibia, and by the weakened development of caudal pair of acrostical bristles.

The species belonging to the genus may be grouped according to their habitus as exemplified in *E. humeralis* Stein and *E. pilimana* (Ringdahl) respectively. In the *humeralis* complex the species are more robust and the males are more setulose, notably on the lower occipital region of head, at base of stigmatal bristles situated below the mesothoracic spiracle, on the scutellum, and on the first three abdominal sterna; in both sexes the notopleural callosities have setulæ, the three apical bristles on dorsal aspect of hind tibia are robust, *m-cu* cross vein is oblique and sinuate;

in males the abdomen is conical, and when viewed from behind the sclerites caudad of fifth tergum present a normal symmetrical pattern (fig. 4), the prebasal plate of hypopygium (tergum 6 of Crampton)⁵ is setulose; in females, the mid tibia has a mid antero-ventral bristle and fore tarsal segments 3 and 4 are broadened in three of four species included in the group.

In the *pilimana* complex the species are comparatively smaller and in the male tend to be less notably setulose, there being but few if any setulæ at base of stigmal bristles; in both sexes the notopleural callosity is usually devoid of setulæ, the three apical bristles on dorsal aspect of hind tibia are variable in development, *m-cu* cross vein is semierect and less sinuate; in the male the abdomen is depressed, sides subparallel, and when viewed from behind the sclerites caudad of fifth tergum present an asymmetrical design owing to the emergence of the seventh sternum laterad (fig. 5),⁵ the prebasal plate of hypopygium is usually bare: in female the mid tibia lacks a mid anteroventral bristle and fore tarsal segments 3 and 4 are not broadened.

Apparently little is known concerning the habits of the different species. Adults occur commonly in the woods in spring and are conspicuous by their absence for the remainder of the season. Stein⁶ has recorded that the larvæ of the European species *Eremomyia triticiperda* (Stein) were noticed in grains of wheat during threshing. He also mentions their unusual structure and that of the pupæ.

The genus is evidently distributed throughout a larger part of the northern and temperate regions of North America, the records ranging from Alaska to California and again from Quebec to northern Georgia.

Genus *Eremomyia* Stein

- Eremomyia* Stein, 1898. Berl. Ent. Zeitschr., (1897) 42 (3-4): 223. Coquillett, 1901. Jour. N. Y. Ent. Soc., 9 (3): 137. Aldrich, 1905. Misc. Coll. Smithsn. Inst., 46: 554. Coquil-

⁵ Crampton, G. C. 1944. A comparative morphological study of the terminalia of male calypterate cyclorrhaphous Diptera and their acalypterate relatives. Bull. Brooklyn Ent. Soc., XXXIX (1): 11-13, figs. 23-34.

⁶ Stein, P. 1900. Einige neue Anthomyiden. Entomologische Nachrichten, XXVI (20): 319.

lett. 1910. Proc. U. S. Nat. Mus., 37: 539. Stein, 1919. Arch. f. Naturgesch., (1917) 83 A (1): 153. Stein, 1920. Arch. f. Naturgesch., (1918) 84 A (9): 73. Hockett, 1924. Mem. 77 N. Y. (Cornell) Agr. Exp. Sta., (1923) p. 10. Séguy, 1937. Gen. Insect., Fasc. 205 p. 121.

Hylemyia (*Eremomyia*) Ringdahl, 1933. Ent. Tidskr., 54 (1): 30.
Genotype: *Eremomyia humeralis* Stein (by designation of Coquillett, 1901).

KEY TO SPECIES

Males

1. Anteroventral region of mesopleura and dorsal region of hypopleura polished 2
Mesopleura and hypopleura without such surface marking 3
2. Shortest distance across frons greater than half distance between first pair of dorsocentral bristles; hind tibia usually reddish.
medicaginis n. sp.
Shortest distance across frons slightly less than half distance between first pair of dorsocentral bristles; hind tibia usually black.
humeralis Stein
3. Shortest distance across frons greater than width of third antennal segment; frons densely whitish pruinose; mesonotum whitish gray.
albidosa n. sp.
Shortest distance across frons not greater than width of third antennal segment 4
4. Abdomen conical, caudal sclerites viewed from behind symmetrical in appearance (fig. 4); notopleural callosity and prebasal plate of hypopygium setulose; *m-cu* cross vein oblique *impolita* n. sp.
Abdomen depressed, caudal sclerites viewed from behind asymmetrical in design owing to emergence of seventh sternum laterad (fig. 5); notopleural callosity and prebasal plate of hypopygium seldom with setulæ; *m-cu* cross vein semierect 5
5. Wings intensively infuscated on anterior and basal regions and notably tinged throughout membrane; cross veins not clouded; calyptæ yellowish brown; abdomen lustrous *fumipennis* n. sp.
Not all characters present 6
6. Lateral margins of face polished and blackish, not concolorous with face; processes each fully as long as half length of hind tibia.
parafacialis n. sp.
Lateral margins of face grayish pruinose, concolorous with face 7
7. Vibrissal angle with several short coarse setulæ; second antennal segment shining black; halteres purplish *obversa* n. sp.
Not all characters present 8
8. Mesonotum and scutellum viewed from in front blackish and unmarked;

second antennal segment partly shining black; abdominal pruinescence smooth and silky **lucescens** n. sp.

Mesonotum and scutellum viewed from in front pale grayish with usually a brownish postsutural dorsocentral vitta, and with or without brownish infuscation caudad; second antennal segment opaque, subshining 9

9. Shortest distance between eyes about equal to diameter of anterior ocellus; cheeks not as high as width of third antennal segment; ventral aspect of occiput bordering oral cavity not polished.

pilimana (Ringd.)

Shortest distance between eyes equal to distance between posterior ocelli; cheeks as high as width of third antennal segment; ventral aspect of occiput bordering oral cavity polished and glossy.

turbida n. sp.

Females

1. Fore tarsal segments 3 and 4 broadened, distinctly wider than segment 5 2

Fore tarsal segments 3 and 4 not broadened, not wider than segment 5 4

2. Anteroventral region of mesopleura, dorsal region of hypopleura, and caudal sclerite of hind coxa polished 3

Mesopleura, hypopleura and hind coxa not so marked **impolita** n. sp.

3. Mid and hind tibiæ blackish *humeralis* Stein

Mid and hind tibiæ reddish yellow **medicaginis** n. sp.

4. Tibiæ reddish yellow; mid tibia with a mid anteroventral bristle; narrowest width of parafacials greater than breadth of third antennal segment **albidosa** n. sp.

Tibiæ black; mid tibia without mid anteroventral bristle; narrowest width of parafacials less than breadth of third antennal segment. 5

5. Halteres dark purplish; second antennal segment shining black; mid tibia with a mid anterior bristle; anterior surface of fore femur with a median series of semierect setulæ 6

Halteres yellowish or occasionally reddish tinged; second antennal segment not shining black; mid tibia without a mid anterior bristle; anterior surface of fore femur without a median series of semierect setulæ 7

6. Lateral margins of face polished, not concolorous with face.

parafacialis n. sp.

Lateral margins of face grayish pruinose, concolorous with face.

obversa n. sp.

7. Height of cheek one fourth that of eye; parafacials at narrowest width exceeding half its breadth at base of antennæ, width at base of antennæ about half diameter of eye measured immediately caudad. 8

Height of cheek less than one fourth that of eye; parafacials at narrowest about half its breadth at base of antennæ, width at base of antennæ less than half diameter of eye measured immediately caudad.

pilimana (Ringd.)

8. Grayish black species; abdominal pruinescence with smooth silky sheen.
lucescens n. sp.
 Species with brownish pruinescence; abdomen not lustrous.
turbida n. sp.

Eremomyia humeralis Stein

Eremomyia humeralis Stein, 1898. Berl. Ent. Zeitschr., (1897) 42 (3-4): 224. Coquillett, 1901. Jour. N. Y. Ent. Soc., 9: 137. Aldrich, 1905. Misc. Coll. Smithsn. Inst., 46: 554. Coquillett, 1910. Proc. U. S. Nat. Mus., 37: 539. Stein, 1919. Arch. f. Naturgesch., (1917) 83 A (1): 153. Stein, 1920. Arch. f. Naturgesch., (1918) 84 A (9): 73. Séguy, 1937. Gen. Insect., Fasc. 205 p. 122.

The species *humeralis* has erroneously been reported by me (1924) from New York.⁷ Stein (1898) mentions the species as occurring in Illinois, a record I have been unable to verify from an examination of material in the collections at Berlin and Chicago. All specimens of *humeralis* that I have seen were collected in the western states and provinces. The species most closely resembles *impolita*, differing essentially in that the mesopleura and hypopleura are partly polished.

British Columbia: 39 ♂, 3 ♀, Cranbrook, May 4-16, 1922 (C. B. D. Garrett), 2 ♀, Robson, April 6-21, 1947 (H. R. Foxlee) [C. N. C.].

Idaho: 2 ♀, Moscow, cotypes [Z. M. U. B., C. N. H. M.]* ♀, Juliaetta, April 2, 1899 (J. M. Aldrich) [U. S. N. M.].

Montana: ♂, ♀, Blackfoot Valley, 16 mi. up Missoula County, April 20, 1938.

Oregon: 2 ♂, Florence, April 5, 1915, ♂, ♀, Forest Grove, March 12, 1919, 3 ♂, 3 ♀, Mt. Angel, [U. S. N. M.].

Utah: ♂, Spanish Fork Canyon, alt. 6500 ft., Febr. 22, 1936, 3 ♂ Provo, alt. 6500 ft., Febr. 1936 (D. E. Hardy).

Washington: ♂, Pullman, March 17, 1909 (W. M. Mason), ♀, same locality, 1909 [Z. M. U. B.]. 2 ♂, Kamiak Butte, Whitman County, March 16, 1941, ♀, Wawawai, May 17.

⁷ Leonard, M. D. 1928. A list of the insects of New York. Mem. 101 N. Y. (Cornell) Agric. Exp. Sta., (1926) p. 837.

* Zoological Museum of the University of Berlin, Chicago Natural History Museum.

Eremomyia impolita new species

Male. Black subshining, with bluish gray pruinescence; antennæ black, second segment shining; palpi black, rufous basad; frons, parafacials and cheeks whitish pruinescent; mesonotum with three vittæ and blackish marking along declivities, mesopleura and hypopleura not partly polished; abdomen with dorsocentral vitta, hypopygium shining. Legs blackish, hind tibiæ more or less reddish tinged, pulvilli brownish; wings faintly tinged or largely clear, fuscous tinged basad, cross veins clouded; halteres deep purple, calyptre and calyptal hairs whitish, calyptal margin yellowish.

Habitus of *humeralis*, shortest distance between eyes slightly less than width of third antennal segment, interfrontalia uninterrupted, much narrower caudad; narrowest width of parafacials about equal to breadth of third antennal segment; cheeks slightly restricted caudad by the course of occipitogenal margin, vibrissal angle densely and coarsely setulose. Thorax with three pairs of presatural acrostical bristles, of which the middle pair is much the stronger. Abdomen conical, anal cleft on ninth tergum restricted to region of cerci.

Fore femur with a distinct series of semierect setulæ on median plane of anterior surface; fore tibia with 1 or 2 posteroventral bristles; mid tibia with 1 anterodorsal, 1 posterodorsal, 2 posterior bristles; hind femur with 10 to 12 anteroventral, and 2 to 4 weaker posteroventral bristles on proximal half, the distal half being finely setulose; hind tibia with 2 or 3 anteroventral, 3 or 4 anterodorsal and posterodorsal bristles respectively, no bristle on distal half of anterior surface: costal thorn short and well developed, about half length of *r-m* cross vein.

Female. Slightly paler than male; ocellar triangle with a small polished area in front on anterior ocellus; mid tibiæ blackish to reddish yellow, hind tibiæ rufous to reddish yellow; caudal pair of ocellar bristles longish and directed outward, marginal bristles of tergum 4 slightly weaker than those of terga 1+2, and 3. Anterior surface of fore femur with a median series of semierect setulæ; anteroventral surface of mid femur with one or more longish bristles on proximal half, mid tibia with a mid anteroventral bristle, otherwise tibial bristling as in male. Fore tarsal segments 3 and 4 broadened, the second partly so; pulvilli whitish. Costal thorn variable in length, slightly longer than in male.

Length 10–10.5 mm.

Holotype and allotype: ♂, ♀, Rainier, Oregon, March 3, 1930 (R. E. Dimick) [U. S. N. M.].

The species *impolita* is closely related to *humeralis*, from which it differs in having the mesopleura, hypopleura and caudal sclerite of hind coxæ wholly unpolished. Within the species there appears to be a variation in the color of the female mid and hind tibiæ from fuscous to reddish yellow. In female specimens from Utah the pruinescence of abdomen is notably paler.

British Columbia: ♂, Copper Mtn., April 8, 1928 (G. Stace Smith) [C. N. C.].

California: ♀, San Mateo County, Febr. 22, 1920 (L. A. Whitney).

Oregon: ♂, Kiger's Island, April 12, 1930 (J. Wilcox). ♀, Rock Creek, 10 mi. West of Corvallis, March 30, 1941 (Fred Glover), ♀, Corvallis, Febr. 22, 1932 (J. Schuh), ♂, Parkdale, March 31, 1938, ♂, ♀, Vernonia, March 30–April 1, 1938 (K. Gray, J. Schuh) [Ore. State Col.]. ♂, Forest Grove, March 14, 1919 (F. R. Cole), 2 ♂, 2 ♀, Rainier, March 3, 1930 (J. Wilcox, R. E. Dimick).

Utah: ♂, Dry Canyon, Logan, March 29, 1942 (J. R. Fowler), ♀, Logan Canyon, March 24, 1940, ♂, Farmington, March 26 (K. M. Pack), 2 ♀, Provo, (Lowell Miller), ♀, Scipio, April 9, 1938.

Eremomyia medicaginis new species

Male. Black with seal brown pruinescence, parafacials and cheeks occasionally rufous tinged; second antennal segment shining black; mesonotum slightly grayish, paler than pleura, with trace of three vittæ; mesopleura polished on anteroventral region, hypopleura extensively so and caudal sclerite of hind coxæ entirely so. Abdomen subshining, pale grayish pruinescent, blackish dorsocentral vitta, basal plate of hypopygium shining. All femora entirely blackish, fore tibia entirely fuscous or blackish, mid and hind tibiæ more or less reddish tinged or reddish yellow, pulvilli brownish. Wings largely clear, tinged basad; *r-m* cross veins faintly clouded, *m-cu* cross veins clear or faintly tinged; calyptræ whitish with outer basal hairs brownish tinged; halteres purplish.

Habitus of *humeralis*, shortest distance between eyes equal to length of third antennal segment, interfrontalia broadly maintained caudad; parafacials and cheeks slightly wider and higher respectively than breadth of third antennal segment, cheeks broadly maintained caudad, vibrissal angle densely and coarsely setulose. Mesonotum with a robust median pair of presutural acrostical bristles and a weaker pair: abdomen conical, not longer than thorax.

Fore tibial bristles fine and slender, with 2 posteroventral bristles; mid tibia with a weak mid anteroventral, an anterior and 2 or 3 fine posterior bristles, 1 stronger anterodorsal and posterodorsal bristle respectively; hind femur and hind tibia bristled as in *impolita*. Costal thorn well developed.

Female. Head and thorax more densely seal brown pruinescent; mesopleura, hypopleura and coxæ marked as in male; abdomen more densely grayish drab, with or without a dorsocentral marking; mid and hind tibiæ largely reddish yellow, pulvilli whitish; parafacials narrower at middle and

cheeks higher than in male; femoral and tibial bristling stronger, otherwise similar to male. Fore tarsal segments 3 and 4 broadened.

Length 8 mm.

Holotype: ♂, Medicine Hat, Alberta, April 2, 1921: Allotype, ♀, same locality, March 20, 1926 (F. S. Carr) [C. N. C.].

The species *medicaginis* has the mesopleura partly and the hypopleura and caudal sclerite of hind coxæ extensively polished. The male may be distinguished from its congeners by the notably broad frons. Except for the male specimen recorded below as captured on March 30, and which is in a teneral condition, the hind tibiæ being blackish, all other specimens of both sexes have at least the hind tibiæ reddish translucent or even reddish yellow.

Alberta: ♂, ♀, Medicine Hat, April 3-23, 1927 (F. S. Carr), ♂, same locality, March 30, 1940 (J. L. Carr) [C. N. C.].

Eremomyia albidosa new species

Male. Black; frons with whitish dust, parafacials and parafrontals with silvery pruinescence, cheeks opaque black; second antennal segment not shining; mesonotum and scutellum from in front whitish pollinose with faint trace of vittæ, pleura darker and subshining; abdominal terga whitish gray pruinescent and with an ill defined linear dorsocentral marking, hypopygium blackish and subshining. All femora narrowly reddish at apex; fore, mid and hind tibiæ successively more distinctly reddish tinged, pulvilli brownish. Wings clear or faintly and uniformly tinged; cross veins not clouded; calyptre hyaline, halteres purplish.

Head, thorax, abdomen and femora not so densely nor so profusely setulose as in *humeralis*; narrowest distance between eyes about equal to length of third antennal segment, interfrontalia broad throughout its length; inner pair of vertical bristles erect and longish, caudal pair of ocellar bristles long and directed outward, parafrontal series of bristles continued caudad to nearly a level with anterior ocellus; parafacials and cheeks at shortest dimensions greater than breadth of third antennal segment, cheeks broadly maintained caudad; third antennal segment twice as long as second; proboscis polished, palpi sparsely setose. Mesonotum with a robust median and two weaker pairs of presutural acrostical bristles; lower posthumeral bristle weakly developed in type; stigmatal bristles devoid of accessory setulæ at base; sternopleural bristles arranged 2:2, the lower anterior bristle finely developed. Abdomen conical as in *impolita*, with stronger marginal bristles on terga, and more bristlelike setæ on hypopygium, prebasal plate sparsely setulose.

Fore tibia with 2 posteroventral bristles; mid femur with 4 or 5 long anteroventral bristles on proximal three fifths, and 4 to 6 shorter posteroventral bristles on proximal half, scarcely longer than height of femur, mid

tibia with 1 anterodorsal, 1 posterodorsal and 2 shorter posterior bristles; hind femur with 8 or 9 anteroventral, and 4 to 6 shorter posteroventral bristles on proximal three fifths, hind tibia with 2 or 3 anteroventral, 3 or 4 anterodorsal, 3 or 4 posterodorsal bristles, tarsi slender and attenuated. Wings with costal thorn as long as or longer than humeral cross vein, costal setulae semierect, several being twice as long as diameter of costa.

Female. Head with brownish pruinescence, frontal vitta and cheeks rufous, mesonotum with seal brown pruinescence; abdomen subshining, pale drab gray, unmarked; tibiae reddish yellow: marginal bristles on abdominal tergum 4 robust and as long as those on tergum 3; mid tibia with 1 or 2 anteroventral bristles, mid and hind femora with slightly longer bristles on posteroventral surface, otherwise bristling of legs as in male. Fore tarsal segments 3 and 4 not broadened.

Length 8-8.5 mm.

Holotype and allotype: ♂, ♀, Manhattan, Kansas, March 25-27, 1932 (C. W. Sabrosky) [U. S. N. M.].

The species *albidosa* may be readily distinguished in the male sex by the more widely separated eyes caudad, and by the dense white pruinescence on the frons; in both sexes the narrowest width of parafacials is much greater than breadth of third antennal segment and all the tarsi are slender and attenuated. In the female the mid and hind tibiae are reddish yellow.

Colorado: ♂, Sandhills N. of Roggen, April 8, 1933 (H. G. Rodeck).

Iowa: ♀, Iowa City, April 15, 1917.

Kansas: ♂, Douglas County, March 18, 1919 (Wm. E. Hoffmann), ♂, Riley County, March 19 (R. C. Smith) [Univ. Kans.].

Eremomyia pilimana (Ringdahl)

Chortophila pilimana Ringdahl, 1918. Ent. Tidskr., 39: 190.

Eremomyia vernalis Hockett, 1924. Mem. 77 N. Y. (Cornell) Agr. Exp. Sta., (1923) p. 11. Leonard, 1928. Mem. 101 N. Y. (Cornell) Agr. Exp. Sta., (1926) p. 837. Séguy, 1937. Gen. Insect., Fasc. 205 p. 122.

Hylemyia (*Eremomyia*) *pilimana* Ringdahl, 1933. Ent. Tidskr., 54: 30. Tiensuu, 1941. Enum. Insect. Fenn., VI Diptera p. 33. Ringdahl, 1943. Tromsø Museums Årshefter, (1942) 65 (2): 9.

Eremomyia pilimana Séguy, 1937. Gen. Insect., Fasc. 205 p. 122. Tiensuu, 1941. Ann. Entom. Fenn., (1940) 6 (4): 155.

The species *pilimana* and *turbida* have yellowish halteres and differ from *fumipennis* and *lucescens* in the lustreless or less shiny appearance of the abdomen. In males of *pilimana* the parafrontals are contiguous and in both sexes the cheeks and parafacials are narrower than width of third antennal segment, whereas in male of *turbida* the parafrontals are narrowly separated throughout their length and in both sexes the cheeks and parafacials are equal to width of third antennal segment.

Georgia: 65 ♂, Clayton, April 15-22, 1940.

New Hampshire: ♀, Durham, May 18, 1907.

New York: 2 ♂, 2 ♀, Ithaca, April 18, 1920 (R. C. Shannon), 4 ♀, Coy Glen, near Ithaca, May 22, 1922, ♂, Ringwood, near Ithaca, May 3, 1922, 6 ♂, 2 ♀, Aurora, May 16, 1920, ♂, Cayuta Lake, May 8, 1935.

Nova Scotia: 2 ♀, Kentville, May 24, 1923 (R. P. Gorham).

Ontario: 10 ♂, 4 ♀, Niagara Glen, June 1-15, 1926 (G. S. Walley), ♂, Nettleby, May 17, 1925 (N. K. Bigelow) [C. N. C.].

Pennsylvania: ♂, Maryville, April 28, 1909 (E. Daecke) [U. S. N. M.].

Quebec: ♂, Aylmer, June 13, 1926 (C. H. Curran), ♀, Laniel, June 7, 1931 (H. S. Fleming), 2 ♀, Old Chelsea, May 3, 1939 (G. E. Shewell), ♂, Queens Park, Alymer, May 6, 1924 (C. B. Hutchings), ♂, Quyan, April 28, 1925 (G. H. Hammond) [C. N. C.].

Virginia: ♂, Dead Run, Fairfax County, March 24, 1925 (R. C. Shannon) [U. S. N. M.].

Wisconsin: ♂, ♀, Devils Lake, May 7, 1937 (F. M. Snyder).

Eremomyia obversa new species

Male. Grayish black, subshining; parafrontals, parafacials and cheeks whitish pruinulent; second antennal segment shining; proboscis pruinulent; mesonotum with pale brownish pruinescence and darker vittæ and markings along declivities; abdomen grayish pruinulent with dorsocentral vitta; legs brownish black, caudal sclerite of hind coxæ shining, pulvilli tinged; wings faintly brownish tinged, denser basad, and cross veins faintly clouded, or wings and cross veins clear in teneral or less matured specimens; calyptræ whitish, halteres purplish.

Shortest distance between eyes about equal to diameter of anterior ocellus, parafrontals contiguous caudad; parafacials at base of antennæ nearly as wide as breadth of third antennal segment, at narrowest less than half

width of third antennal segment; cheeks not as high as width of third antennal segment, gradually narrowed caudad; vibrissal angle with several short coarse setulæ; lower region of occiput with dense slender setulæ, postocular series slender. Mesonotum with a robust median and a second weaker pair of presutural acrostical bristles, stigmatal bristles with a few setulæ at base. Abdomen as in *pilimana*, depressed; processes as long as hind metatarsus, inner border fringed with fine setulæ, apical region with several longer slender bristles curving mesad.

Fore femur without a median series of semierect setulæ on anterior surface, fore tibia with a slender posteroventral bristle; mid femur with a dense series of slender setæ and occasionally one slender bristle on proximal half of anteroventral surface, and an entire series of setæ and 4 or 5 slender proximal bristles on posteroventral surface, mid tibia with 1 anterodorsal, 1 posterodorsal and 2 posterior bristles; hind femur with 8 or 9 longish anteroventral, and 4 or 5 slender bristles on proximal three fifths of posteroventral surface, hind tibia with 2 or 3 anteroventral, 2 longer and 2 shorter anterodorsal, 3 longer and 2 or 3 shorter posterodorsal bristles, apical posterodorsal slender and varying in length. Costal thorn fine and short.

Female with pale brownish pruinescence, abdomen more densely gray pruinescent, with or without a dorsocentral marking; caudal pair of ocellar bristles erect and directed outwards; fore femur with a median series of semierect setulæ on anterior surface; mid femur with 1 to 3 longish anteroventral, and 3 to 5 longish posteroventral bristles on proximal half, mid tibia with 1 mid anterior, 1 robust anterodorsal and occasionally a second weak bristle, bristling on posterior aspect as in male; hind tibia with apical posterodorsal bristle short; fore tarsal segments 3 and 4 not broadened.

Length 5.5 mm.

Holotype and allotype: ♂, ♀, Ithaca, New York, March 25, 1917 (R. C. Shannon) [U. S. N. M.].

The species *obversa* closely resembles *parafacialis*, from which it differs essentially in not having the lateral margins of face polished and black. The species has been mistakenly recorded by me from New York under the name *humeralis*.⁷

Connecticut: ♂, Redding, April 1931 (A. L. Melander).

New York: 9 ♂, 8 ♀, Ithaca, March 25, 1917 (R. C. Shannon, S. H. Emerson), 3♂, 3 ♀, Coy Glen, near Ithaca, May 22, 1922, ♀, Lake Ridge, May 6, 1922.

Ontario: 2 ♂, ♀, Arnprior, March 14, 1926 (C. Macnamara), *ex* ground hog hole.

Quebec: ♀, Old Chelsea, May 3, 1939 (G. E. Shewell).

***Eremomyia parafacialis* new species**

Similar in habitus to *obversa*, differing essentially in both sexes by having the lateral margins of face polished and black in contrast to the grayish

pruinescence on the remainder of the face; cross veins clouded, notably so in female.

Male. Parafacials at base of antennæ and cheeks at shortest dimension about as wide as breadth of third antennal segment, vibrissal angle with setulæ more slender than in *obversa*; processes of fifth abdominal sternum about as long as half length of hind tibia, with nearly as long bristles at apex that are directed ventrad and mesad; fore femur with a median series of semierect setulæ on anterior surface, mid femur more sparsely setulose on anteroventral and posteroventral surfaces than in *obversa*, hind tibia in type with 1 anteroventral, 2 anterodorsal, 2 longer and 3 shorter postero-dorsal bristles, apical posterodorsal weak; costal thorn nearly twice as long as diameter of costa. Length 5 mm.

Female. Wings more densely infuscated and cross veins more densely clouded than in male, lower posthumeral bristle well developed; mid tibia with a mid anterior bristle, fore tarsal segments 3 and 4 not broadened; costal thorn as long as humeral cross vein, costal setulæ in a well defined semierect series. Length 7 mm.

Holotype: ♂, Katmai, Alaska, June 1917 (J. S. Hine). Allotype: ♀, Banff, Alberta, July 18, 1922 (C. B. D. Garrett) [C. N. C.].

The species *parafacialis* and *obversa* are closely related, the former occurring in Alaska, British Columbia and Alberta, and the latter in the eastern states and provinces. The species *parafacialis* may be separated from *obversa* by the shining black appearance of lateral margins of face.

Alberta: 8 ♀, Banff, July 12-20, 1922 (C. B. D. Garrett) [C. N. C.].

British Columbia: ♀, Hedley, July 20, 1923 (C. B. D. Garrett).

***Eremomyia fumipennis* new species**

Male. Brownish black, subshining; parafacials and parafrontals with seal brown pruinescence; second antennal segment shiny, proboscis polished; mesonotum and scutellum from in front blackish, with little trace of markings, when viewed from behind with a black dorsocentral vitta and sublaterals that are decidedly broader on presutural region than on postsutural; abdomen lustrous, hypopygium shiny. Wings extensively brownish tinged, and more intensively on anterior and basal regions, cross veins not clouded; calyptæ yellowish brown including marginal hairs, halteres largely yellow, stalk being purplish tinged. Legs brownish black, subshining, pulvilli fuscous.

Habitus of *pilimana*, narrowest distance between eyes about equal to diameter of anterior ocellus; parafrontals contiguous at middle of frons, parafacials at base of antennæ and cheeks at shortest dimension less than

width of third antennal segment, the former at narrowest about equal to one fourth width of third antennal segment, cheeks gradually narrowed caudad, third antennal segment 1.75 times as long as second. Mesonotum with 3 pairs of presutural acrostical bristles, lower posthumeral bristle well developed, sternopleural bristles arranged 1:3, the lower caudal bristle being slender and weak. Abdomen as in *pilimana*.

Fore femur with no trace of median series of semierect setulæ on anterior surface, fore tibia with 2 posteroventral bristles; mid femur with a dense series of slender setulæ on proximal two thirds of anteroventral and along entire length of posteroventral surface, and with 3 proximal posteroventral bristles, mid tibia with 1 anterodorsal, 1 posterodorsal and 3 posterior bristles; hind femur with 8 or 9 bristles on distal three fifths of anteroventral surface, and with 2 or 3 short bristles on median third of posteroventral surface, hind tibia with 2 anteroventral, 2 long and 2 short anterodorsal, 3 longer and 3 shorter posterodorsal bristles, apical posterodorsal weak; costal thorn short and inconspicuous. Length 6.5 mm.

Holotype: ♂, Tacoma, Washington, April 12, 1913 (J. M. Aldrich) [U. S. N. M.]

The males of *fumipennis* have the wings and calyptre extensively yellowish brown and the abdomen lustrous, thereby distinguishing them from those of related species.

Oregon: ♂, Forest Grove, March 28, 1919 (F. R. Cole).

Eremomyia lucescens new species

Male related to *fumipennis*, differing in that the parafrontals, parafacials and cheeks are whitish pruinose; second antennal segment shiny and mesonotum blackish as in *fumipennis*; abdomen with distinct sheen and more grayish pruinose; wings faintly tinged, largely clear, calyptre whitish, halteres dull yellowish brown with trace of purple tinge.

Female paler than male, subshining; second antennal segment not shiny, mesonotum with a brownish dorsocentral vitta; abdominal terga highly shiny, with scant silky pruinoscence and trace of dorsocentral marking. Wings yellowish brown tinged, denser basad, cross veins unclouded, calyptre yellowish. Parafacials at base of antennæ and cheeks at shortest dimension equal to breadth of third antennal segment; presutural acrostical bristles varying in development, absent in allotype, lower posthumeral bristle weakly developed or absent, stigmatal bristles with a few accessory setulæ at base.

Fore femur without median series of semierect setulæ on anterior surface, fore tibia differing from male in having an apical posterodorsal bristle; mid femur with anteroventral surface bristleless or with one prebasal bristle, and with 2 or 3 proximal posteroventral bristles, mid tibia with 1 anterodorsal and 1 posterodorsal bristle, 1 or 2 posterior bristles, and in occasional specimens a second weak posterodorsal; hind femur with 6 to 8

anteroventral bristles, and 2 or 3 on median third of posteroventral surface, hind tibia with 2 anteroventral, 2 longer and occasionally 1 or 2 shorter anterodorsal bristles, 2 longer and 2 to 4 shorter posterodorsal, apical posterodorsal bristle weak. Costal thorn finely developed, varying in length.

Length 5.75 mm.

Holotype: ♂, Banff, Alberta, alt. 7600 ft., June 13, 1922 (C. B. D. Garrett). Allotype: ♀, same locality, August 2, 1922. [C. N. C.].

The species *lucescens* has the abdomen notably shiny, but not so lustrous as in the male of *fumipennis*. Neither are the wings of the male of *lucescens* as strongly tinged as in the male of the latter species.

Alberta: 9 ♀, Banff, July 19, 1915 (N. B. Sanson), 2 ♀, same locality, alt. 7600-8000 ft., August 2-3, 1922 (C. B. D. Garrett) [C. N. C.].

British Columbia: 2 ♀, Hedley, July 19-20, 1923 (C. B. D. Garrett) [C. N. C.].

Washington: ♀, Mt. Baker, July 29, 1931 (R. H. Beamer) [Univ. Kans.].

Eremomyia turbida new species

Essentially resembling *pilimana*, but the eyes are more widely separated in the male, the interfrontalia in the type being uninterrupted caudad and hence the parafrontals are not contiguous at middle. In both sexes the parafacials and cheeks are wider, and the ventral surface of head bordering oral cavity is largely polished black.

In the male type the lower posthumeral bristle is weakly developed, setose; the prebasal plate of hypopygium has several setulae; abdominal sterna 1 and 2 shining and glossy, and sternum 3 partly so; caudal sclerite of hind coxae polished. Fore tibia with 2 posteroventral bristles. Wings yellowish tinged, calyptæ whitish, halteres yellow, the knobs pinkish tinged.

Female, parafrontals and parafacials with brownish pruinescence, mesonotum suffused with brownish infuscation, abdomen yellowish gray pruinescent; presutural pair of acrostical bristles lacking; hind tibia in allotype with 2 anterodorsal bristles, fore tarsal segments slender; wings more yellowish than in male, calyptæ yellowish tinged; costal thorns as long as humeral cross vein.

Holotype and allotype: ♂, ♀, Baker Lake, North West Territories, July 12-20, 1947 (T. N. Freeman) [C. N. C.].

The species *turbida* largely resembles *pilimana*, from which it differs in having wider cheeks and parafacials, and in the male in having the eyes more widely separated across the frons.

PLATE VI

Figures 1 to 3. Male copulatory appendages of *Eremomyia humeralis* Stein, showing caudal or dorsal and lateral aspects of tergum 9, ventral aspect of sternum 5.

Figures 4 and 5. Semidiagrammatic drawings of the caudal aspect of male terminal abdominal sclerites in *Eremomyia humeralis* Stein (fig. 4), and in *Eremomyia pilimana* (Ringdahl) (fig. 5).

5 T = tergum 5

6 T = tergum 6, "prebasal plate of hypopygium."

9 T = tergum 9, "anal sclerite."

7 S = sternum 7

8 S = sternum 8, "basal plate of hypopygium."

